Al Waha International Language Schools



Prep.1

First Term

2017 – 2018



Matter and its characteristics

Matter: **It is anything that has a mass and a volume .**

Object can be distinguished from each other by physical and chemical properties :

A-physical properties

1-The color ,taste ,and smell

***Color**:- it can be used to differentiate among iron, silver and gold

***Taste:-**it can be used to differentiate among sugar, table salt and flour.

***The smell:-**it can be used to differentiate between vinegar and perfume.

2- Density

It is the mass of unit volume of matter.

Or It is mass of one cubic centimeter of matter.

Massit is the amount of matter that the body contains.

Volumeit is the space that occupied by the object .

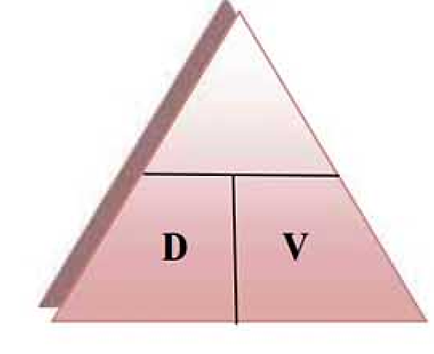
Note:

The measuring unit of mass (kg-gm)

The measuring unit of volume (cm^3) **M**

The measuring unit of density (gm/cm^3)

Density = mass/ volume



Problem : calculate the density of 35 gm of iron that occupies $25 cm^3$

.

Density = mass / volume = 35/25 = 1.4 gm/cm^3

G.R

Equal masses of different substances have different volumes.

Because they have different densities .

Note :

Density of water =1 So Materials which have higher density than water sink in it such as iron nail and metallic coin , while other materials which have lower density than water float on its surface such as wood , cork , ice and drops of oil .

3- Melting point

It's the temperature at which a matter begains to change from a solid state to a liquid state.

-Some solid substances have low melting points such as wax , butter ,ice.

-Some solid substances have high melting points such as iron , copper ,table salt .

application on melting process :Life

1- in manufacture of alloys

Copper-gold alloy .

It is an alloy used in making of jewels used for decoration .

Nickel – chrome alloy .

It is an alloy used in making of heating coils .

2- In the manufacture of cooking pans (pots)

They made of steel which does not rust as they have high melting point .



4- Boiling point

It is the temperature at which begins to change from a liquid state to gaseous state.

*Boiling point of water = 100 C^0

application on boiling process :Life

Separation of the components of petroleum oil .

5- Hardness

-Some solid substances are soft at room temperature such as rubber .

-Some solid substances need heat to become soft to be shaped such as metals .

-Some solid substance cannot be soften by heating such as Coal and sulhur .

Life application on hardness:

The screwdrivers are made of steel iron .-

Because it is very hard .

-The rods used in building houses concrete are made of iron not copper

Because the hardness of iron is more than that of copper .

6- Electric conductivity

Substances can be classified according to electric conductivity into :

A- Good conductor of electricity.

B- Bad conductor of electricity.

Good conductor of electricity	Bad conductor of electricity.
Substance allow electricity to flow through.	Substance do not allow electricity to flow through.
Examlple:metal,iron copper acidic and alkaline solution some salt .	**Example** : wood ,plastic gases solution of hydrogen chloride in benzene sugary solution some solid element as sulphur phosphorus .

Life application on electric conductivity:

1- **Electric wire are made of copper**

Because copper is a good conductor of electricity..

7- Heat conductivity

Substances can be classified according to thermal conductivity into :

A- Good conductor of heat.

B- Bad conductor of heat .

Heat conductor	Heat insulator.
Substance allow heat to flow through.	Substance do not allow heat to flow through.
Examlple:metal,iron copper .	**Example** : wood ,plastic , air .

Life application on heat conduction

1-Cooking pans are made of aluminum -١

Because it is a good conductor of heat

2- handle of cooking pans are made of wood or plastic

Because wood and plastic are bad conductors of heat.

Second chemical activity :

Metal can classified according to their chemical activity into three groups:

A- very active metals

They are metals which react with oxygen as soon as being exposed to humid air , so they lose their metallic luster .

Examples : (Sodium and potassium)

Sodium and potassium are kept under kerosene surface .

To prevent their reaction with atmospheric oxygen .

B- Less active metals

They are metal which react with oxygen if left in air for some days and a layer of rust is formed .

Examples: (Iron , aluminum and copper)

Steel bridges and the holder of light bulb are painted from time to time .

To protect them from rust and corrosion .

Metallic spare parts of cars are covered with grease .

To protect them from rust and corrosion.

Washing of cooking pans made of aluminum with a rough material.

To remove any layer formed on them .

C-inactive metals :

They are metals which find great difficulty to react with oxygen .

Examples : Silver , Gold ,Nickel ,platinum ,chromium .

Silver and gold are used in making jewels.

Because silver and gold are chemically poor active.



Work sheet (1)

Lesson (1)

Complete the following statements :

1- The measuring unit of mass is ……………, while …………. is the measuring unit of volume .

2-The density is the …………… of unit volume of a substance and its measuring unit is ……………

3-The melting point is the temperature at which matter changes from a …………… state into a …………one

4- …………… is one of solid substance which appear soft at room temperature while …………… and ……………..don't become soft by heating .

5- ………………… alloy is used in making jewels , while …………. alloy is used in making heating coils .

6- ……………… and ………………… are good conductors of electricity and heat while ………… and ………… are bad conductors of electricity and heat .

7-Electric wires are made of ………… or …………… as they are ………….. conductors of electricity .

8- Steel bridges and the holder of light bulb are painted from time to time to be protected from ………………… and ……………

9- …………… and ……………… are from the substances which have low melting points ,while ……………… and ……………. are from the substances which have high melting points .

10- …………… and ………………. are very active metals ,while …………… and …………… are inactive ones .

Write the scientific term :-

1- The mass of unit volume of the substance . ( )

2-The amount of matter that the body contains . ( )

3- The space that a substance occupies . ( )

4- Metal react with atmosphere oxygen when they are exposed to humid air . ( )

Give reason :-

1-A piece of wood floats on water surface ,while a piece of lead sinks in it .

……………………………………………………………………………………………

2- An iron nail sinks , while one kilogram of cork floats .

……………………………………………………………………………………………

3- Water is not used to put off petrol fires .

……………………………………………………………………………………………

4-Iron rods not copper rods are used in building concrete houses .

……………………………………………………………………………………………

5- handles of cooking pans are made of wood .

……………………………………………………………………………………………

What is meant by :-

Matter :……………………………………………………………………………

Melting point : ……………………………………………………………………

Boiling point :……………………………………………………………………

Problems :

1- Calculate the density of iron cube , its mass 70.2 gm and its volume 9 cm^3.

……………………………………………………………………………………

……………………………………………………………………………………

……………………………………………………………………………………

2- If the density of copper is 8.9 gm/cm^3.find the volume of 0.5 kg of copper .

……………………………………………………………………………………

……………………………………………………………………………………

……………………………………………………………………………………



Matter construction

<u>The molecule</u> :It is the smallest part of matter which can exist freely and it has the properties of matter .

Matter is composed of small building unit called molecules

The properties of the molecules of matter

1- Molecules of matter are in a continuous motion.

2- There are intermolecular spaces among the molecules of matter.

3- There are attraction forces among the molecules of matter.

<u>Molecules of matter are in a continuous motion .1-</u>

Permanganate molecules are dissociated into particles and spread in water gradually in all direction until the color of water has been changed into violet.

<u>**Note**</u> : The molecules of solid matter have an oscillatory motion ,while the motion of liquids is limited and that of gases is unlimited .

2-There are intermolecular spaces among the molecules of matter.

The volume of a mixture of water and alcohol is less than the sum of their volume before mixing .

Because some molecules of alcohol occupy the intermolecular spaces among water molecules .

3-There are attraction forces among the molecules of matter.

It is difficult to break an iron piece with your finger .

Because there is a strong attraction force among iron molecules .

Note :

solid	liquid	gas
They have definite shape and volume .(limited -oscillatory motion)	They have definite volume and indefinite shape.(more free)	They have indefinite shape and indefinite volume .(completely free)
Narrow intermolecular spaces .	Intermediate intermolecular spaces .	Large intermolecular spaces .
Very strong intermolecular forces .	Weak intermolecular forces.	Very weak intermolecularforce .

G.R :-Melting : It is the change of matter from the solid state to liquid state by heating .

Because solid substance absorb heat so :-

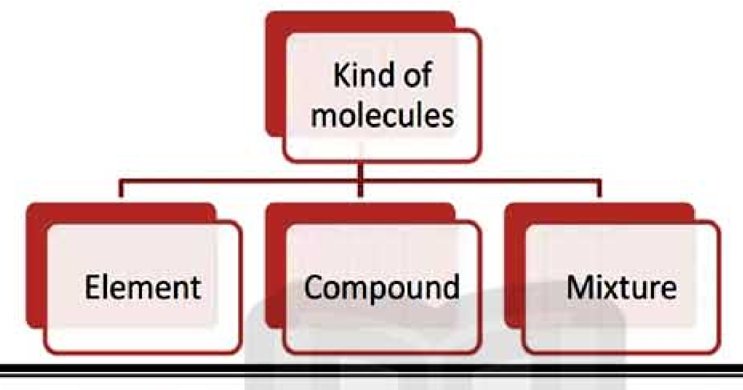
Its motion will be increase , intermolecular space increase and intermolecular force decrease so its change from solid to liquid .

G.R :- Vaporization It is the change of matter from the liquid state to gases state by heating .

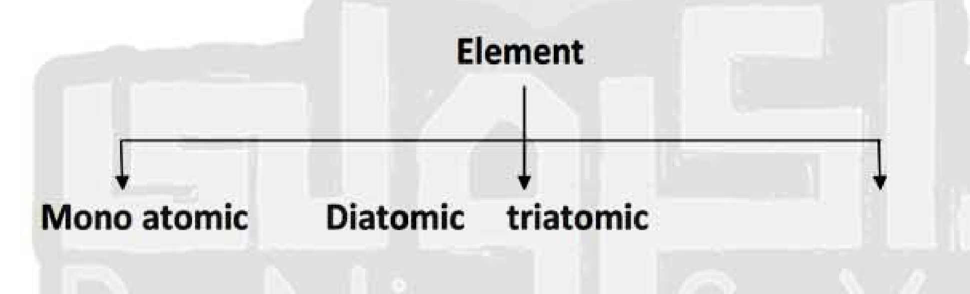
Because liquid substance absorb heat so :-

Its motion will be increase , intermolecular space increase and intermolecular force decrease so its change from liquid to gas .

The molecule is composed of tiny structural units called 'Atom'



The element :- It is the simplest pure form of matter which can't be analyzed .



Element molecules formed of only one atom (monatomic)	Element molecules formed of two atom (diatomic)	Element molecules formed of three atom (triatomic)
Solid as copper sulphur Liquid is mercury Gas are noble gas (Helium- neon argon - krypton – xenon – radon)	Liquid is bromine Active gases are (oxygen- hydrogen- chlorine – nitrogen – fluorine)	Ozone gas





Active gases are diatomic while noble gases are monoatomic

Mercury is liquid it composed of one atom while bromine is liquidtht composed of two atom .

The compound :-It is substance which is formed from combination of atoms of two or more different elements with constant weight ratios .

Compound molecule	The types and number of atoms
1- sodium chloride (Table salt) NaCl	It consists Of two different elements
2- water H_2O	It consists of three atom of two different elements
3- ammonia NH_3	It consists of four atom of two different elements



Work sheet(2)

Lesson (2)

A)complete

1-………… takes the shape of the container , while ……….. have definite shape.

2- Matter consists of small building units called ………… which consist of smaller building units called ………..

3- The liquid element which consists of one atom is ……………….. , while that consists of two atoms is ……………

4- Hydrogen molecules is composed of ……….atom , while argon molecule is composed of …………… atom .

5- Table salt compound is consisting of …………. atom and ………. atom .

Write the scientific term :-

1- The smallest part of matter which can exist in a free state and keep the properties of matter . ( )

2- space that found among the molecules of matter . ( )

3- The simplest state of matter which cannot be decomposed into a into a simpler one by chemical means . ( )

4- The combination of two or more different elements . ( )

5- The compound molecule which is formed of three hydrogen atom and one nitrogen . ( )



Give reason:

1-The odour of perfume spreads all over the room when the bottle is open .

……………………………………………………………………………………………

2-the volume of a mixture of water and alcohol is less than the sum of their volume before mixing .

……………………………………………………………………………………………

It is difficult to break down a piece of iron with your hand .

……………………………………………………………………………………………



Atomic structure of matter

The chemical symbols of element :

Element	Symbol	Element	Symbol
Hydrogen	H	Chlorine	Cl
Helium	He	Argon	Ar
Lithium	Li	Potassium	k
Carbon	C	Calcium	Ca
Nitrogen	N	Iron	Fe
Oxygen	O	Copper	Cu
Fluorine	F	Zinc	Zn
Neon	Ne	Bromine	Br
Sodium	Na	Silver	Ag
Magnesium	Mg	Iodine	I
Aluminum	Al	Gold	Au
Silicon	Si	Mercury	Hg
Phosphorus	P	Lead	Pb
Sulphur	S		

The atom :- It is the fundamental building unit of matter .
Or it is the smallest individual unit of matter which can share in chemical reaction .



The atomic construction :-

1- Nucleus

It is the centeral core of the atom ,where the mass of the atom is concentrated in it .
It is positively charged because it contain :
a- Protons (+ ve)

b-Neutrons (±ve) (electrically)

(Electron)

Nucleus)(proton-neutron)

2- electron:-

They are negatively charged particles.

They move around the nucleus in orbits with very high speed.

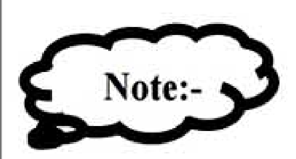
The electron has a negligible mass relative to that of the proton or neutron , so the mass of the atom is concentrated in the nucleus .

G.R

The atom is electrically neutral in its ordinary state .

The number of negative electron which revolve around the nucleus is equal to the number of positive proton in the nucleus .





Atomic number:it is the number of proton in the nucleus of an atom or number of electron .

it is written below the symbol from the left side .

$$H^1_1$$

Mass number

It is the sum of the numbers of proton and neutrons in the nucleus of an atom .

: it is written above the symbol



1- If the nucleus of sodium atom contains 11 proton and its mass number is 23 , find the atomic number and the number of neutrons .

The atomic number = no. of proton = 11

The number of neutron = mass number – atomic number = 23 – 11 = 12 .

Atomic no. = no. of proton = no. of electron .

Mass no. =no. of proton (atomic no.) + no. of neutrons

Number of neutron = mass no. – atomic no.



The energy levels:-

They are imaginary regions around the nucleus in which the electron move according to their energies .

The maximum number of energy levels is seven levels (K-L-M-N-O-P-Q)

The first energy levels k has the least energy ,Q has the highest energy .

Quantum :-

It is the amount of energy lost or gained by an electron when it transfer from one energy level to another .

The excited atom :-

It is the atom that gains a quantum of energy

The no. of electron which saturates the first four energy levels can be calculated from $2n^2$

The no. of energy level (k) $=2\times(1)^2=2$

(L)=8 (M)=18 (N)=32

Note:-

The rule $2n^2$ is not applied to calculate the number of electron of the energy levels higher than four because the atom is not stable .

The outer most energy level of any atom can't take more than 8 electron except k which saturated with 2 electron .

Active gas	Inactive gas
The outer level contain less than 8 electron. They take part in chemical reaction. Their molecules are formed of two atoms.	The outer level is completely filled with 8electrons (except He) They don't take part in chemical reaction. Their molecules are formed of one atoms.

Proplem

Write the electronic configuration of the following

O_8 Na 11

K L k L M

O_8 2 6

Na 11 2 8 1



Work sheet (3)

Lesson (3)

Complete the following :-

1- The symbol of sodium atom is ………………, while that of sulphur atom is …………………

2- The mass number is the sum of ……………… number and …………, which exist in the nucleus .

3- Electron are particles with ………….. charges , while proton are particles with …………….. charges .

4- The second energy level (L) is saturated with ………… , while the fourth one (N) is saturated with …………… electron

5-Active element should have ………….. than 8 electron in outermost energy level .

Write the scientific term :-

1- The fundamental building unit of matter that can take part in the chemical reaction . ( )

2- The number of positive proton in the nucleus . ( )

3- The sum of the number of proton and neutrons in the nucleus . (

4- The number of negative electron that rotate around the nucleus .(

5- Negatively charged particles of negligible mass that revolve around the nucleus . ( )

6- Imaginary places around the nucleus in which the electron move according their energy . ( )

7- The amount of energy lost or gained when an electron transfer from one energy level to another . ( )

What is meant by :-

The atom :-………………………………………………………………

Atomic number :- ……………………………………………………

Write the symbol :-

1- Sodium

2- Potassium

3- Calcium

4- Chlorine

5-Nitrogen

6- Aluminum

Write the name of the element :-

1-H

2-He

3- Au

4-Ag

5-Pb

6-S



Unit 2

Lesson 1 :- Energy resources and forms

Work :-When a force acts on a body, it moves a distance in the direction of such force . it's said that a work is done on such object.

Energy :- It's ability to do work .

The measuring unit of work (energy) is joule .

$$Work(W) = force(F) \times displacement(d)$$

(joule) (newton) (meter)

W

F x d

Energy resources:-

*The sun (permanent source of energy).

*The wind (renewable source of energy).

*The food (through chemical reaction).

*The movement of water .

* The nuclear energy.

Energy forms

*Mechanical energy (potential energy+ kinetic energy)

Ex :-(Waterfall - the energy stored in the stretched spring).

*Electric energyEx :- (wind generator – solar cell).

*Light energy Ex :- (Electric lamp).

*sound energy Ex :- (radio).

*Heat energy Ex :- (Oven – Heater).

*Nuclear energy Ex:- (Reaction in the nucleus of an atom).

*Chemical energy Ex:-(The energy stored in the food or car battery)

The mechanical energy

It is the summation of potential and kinetic energies of the body .

Mechanical energy = potential energy + kinetic energy



*By decreasing potential energy of the bode ,the kinetic energy increase , and vice versa.

* Each body has a constant value of mechanical energy



If we have a body moves between two point :-

- At maximum height :- the mechanical energy = potential energy.
- At the lower point :- the mechanical energy = kinetic energy.
- At the middle point :- the potential energy = kinetic energy.

  the mechanical energy = 2X kinetic energy

  Or 2Xpotential energy
- At any point :-the mechanical energy = kinetic energy + potential energy

The potential energy

It is the stored energy in the object duo to the work done on it

***The factors affecting the potential energy**

1- Weight of the object . 2- Height of the object .

1- Weight of the object :-

The potential energy increase by increasing the weight.

Weight (newton) = mass (k.g)X 9.8

2- Height of the object :-

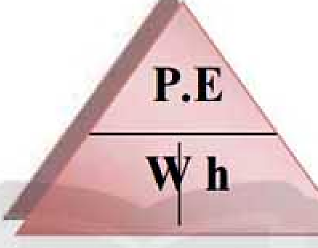
The potential energy increase by increasing the height



*So we can calculate the potential energy from the relation :-

Potential energy (p.E) = weight (w) X Height (h)

Joule Newton meter



Problem

An object ,its mass =10 k.g and it is an a height = 5 m . calculate the potential energy .

Weight = mass X 9.8 = 10 X 9.8 = 98 N

Potential energy = Weight X height = 98 X 5 = 490 J

Kinetic energy

It is the work done during the motion of an object .

***The factors affecting the kinetic energy**

1- Velocity (speed) of the object . 2-Mass of the object .

1- Velocity (speed) of the object :-

The kinetic energy increase by increasing the speed .

2-Mass of the object :-

The kinetic energy increase by increasing the mass.



*So we can calculate the potential energy from the relation :-

$$\text{Kinetic energy (K.E)} = \tfrac{1}{2} \times \text{Mass (M)} \times (\text{Velocity})^2 (V)^2$$

Joule K.g $(m/sec)^2$

K.E

$\frac{1}{2}MV^2$

===

Problem

A racing bike is moving with velocity of 20 m/s^2. calculate the kinetic energy by knowing that the mass of bike is 8 kg.

Kinetic energy = ½ mass X (velocity $)^2$

K.E $= \frac{1}{2} \times 8 \times (20)^2 = 1600$ Joule .

At maximum height :- potential energy max and kinetic = zero

At lower point :- kinetic energy max and potential energy =zero

Work sheet

Lesson 1 unit 2

Give reason for:

1. The K.E at maximum height equal zero.

……………………………………………………………………………………

……………………………………………………………………………………

2. Two cars of mass 5 kg and 15 kg respectively are moving with the same velocity which one has the highest K.E?

……………………………………………………………………………………

……………………………………………………………………………………

……………………………………………………………………………………

Problems

2- A body of mass 2 kg. falls freely from rest from a distance 40 m height by a speed = 5 m/sec

Knowing That $g = 10\ m / s^2$.

Calculate K.E and P .E

……………………………………………………………………………………………

……………………………………………………………………………………

.

Calculate the K.E of a car moves with velocity 10 m / s if it mass is 900 kg ?

……………………………………………………………………………………………
………

……………………………………………………………………………………………
………



Lesson 2 Energy transformation

***The conservation low of mechanical energy .**

-The vibrating body moves on both sides around its original position (B).

-The velocity of the vibrating body decreases as it goes away from its original position .

(A)(c)

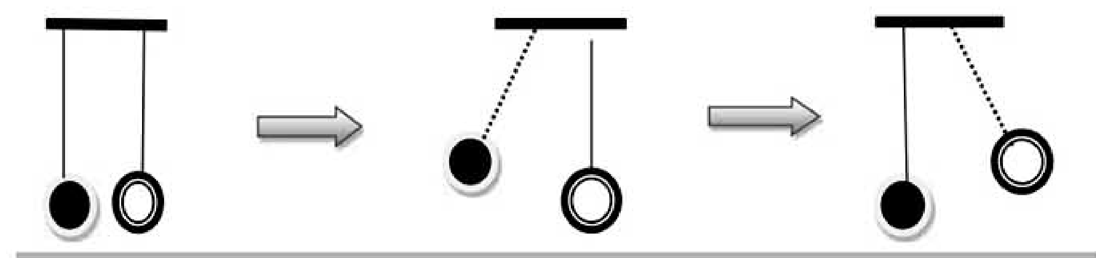
(B)

-**When** the ball passes its original position (B) its velocity is maximum
So, Kinetic energy is a maximum value ,and potential energy is the minimum value .

-**When** the ball reaches the maximum height (A&C) ,its velocity is zero
So , Kinetic energy is zero Potential energy is the maximum

-If we have two pendulums :-

When the ball of the moving pendulum strikes the ball of the rest one , the second pendulum moves and the moving one will stop .



*The object keep its mechanical energy which alternates between potential energy and kinetic energy .

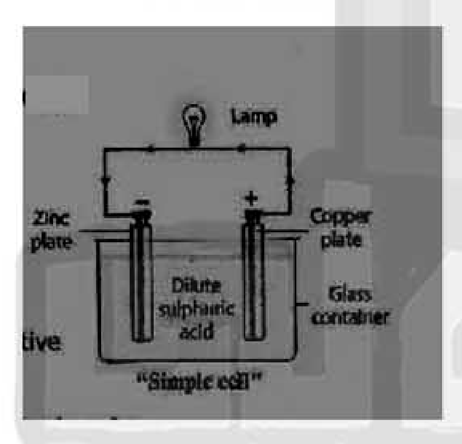
Energy transformation

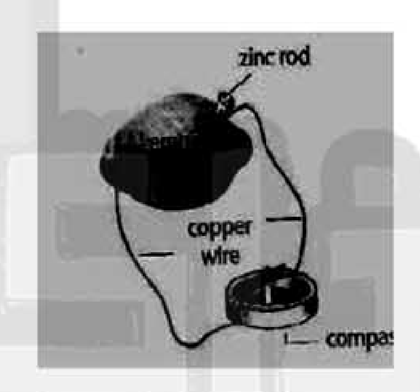
Energy is neither created nor destroyed, but it is converted from one form to another .

Examples on energy transformation

1- **Energy transformation in the simple cell** .

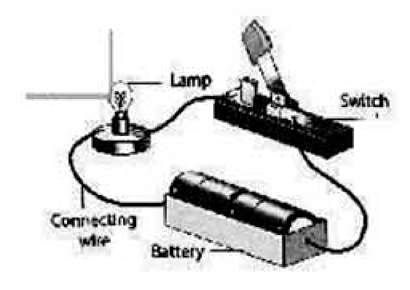
(It converts the chemical energy to electric energy





2- **Energy transformation in the electric lamp**

(It convert electric energy to light energy)



3- Energy transformation inside the car

Car constituents	Energy transformation
*car engine	-Chemical energy into heat energy. -Heat energy into mechanical energy.
*car dynamo	- Mechanical energy into electric energy.
*car lamps	- Electric energy into light energy.
*car radio	- Electric energy into sound energy.
*car air conditioner	- Electric energy into heat energy.

4- Technological application on energy transformation

Application	Energy changes
*Sewing machine	- Electric energy into mechanical energy.
*Solar cell	- Solar energy into electric energy.
*Television	- Electric energy into light and sound energy.
*Alarm clock	- Chemical energy into kinetic and sound energy.
*A cellular phone	- Radiant energy into sound energy.

Harms of technological applications

car exhaust	Chemical pollution of air which causes chest and eye diseases
Military explosions	Pollution of air - diseases - death
Chemical pesticides	Pollution of (air - water – soil) So it causes (cancer- food poisoning)
Nuclear weapons	Massive destruction
The webs of wireless	Electromagnetic pollution causing heart diseases
Loud speakers	Sound pollution

Work sheet

Lesson 2

. Write the scientific term:

1. It is used to convert the mechanical energy into to electrical energy.

[...]

2. It is composed of an acid solution with two different metals dipped in.

[...]

3. Energy is neither created nor destroyed but it changed from one form to another.

[...]

- Complete:

1. In the electric lamp …………… energy is converted into …………… energy.

2. On leaving the pendulum to move freely …………… energy is converted to

……….and

this confirm the law of ……………………..

3. …………….from the technological application that causes air pollution.

4. Electric energy is changed into ……………energy in the electric bell

5. Friction converts …………….energy to …………..…. energy.

6. The Lemon contains ……………..solution.

Lesson 3 Heat energy

We get heat by many ways such as :-

Sun - Friction

The heat energy :- It is a form of energy which is transferred from the object of higher temperature to that lower one .

The temperature :- It is the heat condition which states the direction of heat energy whether from or to the object when it comes in contact with another .

The production of heat energy

- By sun
- By friction (mechanical energy change into heat energy)

The transfer of heat

- Heat transfer from higher temperature to lower temperature
- Heat transfer stop when the temperature of 2 object are equale .

*Ways of heat transfer

Heat transfer through different media by 3 ways

- Conduction
- Convection
- Radiation

- Heat transfer by conduction :-

It is the transfer of heat through solids from the part of higher temperature to the part of lower temperature.

*Heat can transfer during good conductor of heat .

andcann't transfer during a bad conductors of heat .

G.R * Cooking pots are made of aluminum .

Because the aluminum is a good conductor of heat

*Handles of cooking pan are made of plastic .

Because plastis is a bad conductor of heat.

- Heat transfer by convection :-

It is the transfer of heat in gases and liquid ,where hot molecules which have less density rise upward ,while colder molecule which have more density fall down.

Life application

- The air conditioner is fixed at the upper part of the room
- The freezer of the fridge at found at the top.

  Because the cooled air has higher density so it go down and hot air has lower density go up .

- The electric heater is placed at the bottom of the room .

  Because the hot air has low density so it go up and cooled air has higher density go down so heater can warm all the air in the room .

Heat transfer by radiation :-

It is the transfer of heat from the hot object to another without any need for a material medium through which heat transfers .

G.R * Wearing dark clothes during winter .

To absorb heat of the sun

*Wearing light color clothes in summer .

To reflect light and heat





The sun

It is the cleanest form of energy on the earth

Important of the sun (solar cell)

1-In plants the solar energy is stored as a chemical energy by the photosynthesis process.

2-In fuel and petroleum the solar energy is store as chemical energy.

3-The solar energy are responsible for evaporation of water from seas oceans and rivers to form clouds .

4-The solar energy Is the cause of the wind which is used to generate the electric energy .



Work sheet
Lesson 3

Give reason for:

1. Solar heater is preferred than the gas heater.

……………………………………………………………………………………………

……………………………………………………………………………………………

2. The freezer is found at the top of the fridge.

……………………………………………………………………………………………

……………………………………………………………………………………………

Complete

1. As the ………………….of molecules increases the ………………..energy increases so

the temperature…………………………

2- Heat is a form of energy that is transferred from …………………..body to …………. body.

3. Heat is transferred through Iron by ……….while it transfers through Milk by ……….

4 ……………is the main source of most energies on the surface of the Earth.

5. …………..,………………and ……………are from the technological applications that

are used to produce heat energy.

6. The heat of the Sun is delivered to Earth by ……………………

7 ………………is a permanent source of energy while ………………is a non-permanent source.





Unit 3

Lesson 1 Living organisms diversity

First :- Diversity of animals

We can differentiate between the animals according to its characteristics such as

1- The shape
2- The way of feeding
3- The size → Small animals (rabbit - rat – lizard)
Big animals (elephant – rhinoceros)
4- The environment where this animal live

Animals live in water (aquatic) (Fish – crocodiles)

Animals live on land (Horse – lion)

Second :- Diversity of plants

We can differentiate between plants according to its characteristics such as

1- The size → Huge trees (Camphor – palm tree)
→ Short weeds (gargeer – clover)

2- The size of leaves → Small leaves (molukhiya)
→ Large leaves (banana plant)

Third :- Diversity of micro-organisms

Micro-organisms :-They are living organisms that can't be seen by naked eyes (they are unicellular organisms) , but they spread everywhere around us .

Micro-organisms differ from each other in shape and the way of movement .

Classification of living organisms

Classification of living organisms

First :- classification of plants

Plants can be classified according to → External shape
→ Way of reproduction

1- Classification of plants according to external shape

Can't be Distinguished into Root,stem,leaves Ex (green ,red algae	Can distinguished intoroots.stem, leaves . Ex (corn – wheat)

2- Classification of plants according to their way of reproduction

Reproduction of plants by → Formation of spores.
→ Formation of seeds.

A) Plants reproduce by formation of spores

(Ex:- vougheir – adiantum)



B) Plants reproduce by formation of seeds

Reproduction by seeds

- **Angiosperms**
  Their seeds are formed inside pericarp
  - **Monocotyledon**
    Ex (corn - wheat)
  - **Dicotyledon**
    Ex (bean - pea)
- **Gymnosperms**
  Their seeds are formed inside cones
  Ex : pine-cycas

Second :- classification of animals

Animals classified according to ~~Nature of body~~ supporting.

→ The number of legs .

The number of teeth. →

1- Classification of animals according to the nature of body supporting

Animal body may be
- Soft body
- Supported body
  - External
  - Internal

1- Soft body(doesn't have support)

(**Ex** :- jellyfish – worms)

2- Supported body

A) Animals with an external support

(**Ex**:- Mussel – snails)

B) Animals with an internal support.

(**Ex** :- Fish – birds – cat)

Note

Some animals has external and internal support as turtle .

2-Classification of arthropods according to the number of legs

Arthropods :-They are invertebrate animals that are characterized by the presence of jointed legs .

Arthropods classify into

Insects	Arachnids	Myriapods
(They have 3 pairs of jointed legs)	(They have 4 pairs of jointed legs)	(They have numerous of jointed legs)
Ex :- (ant - bees)	**Ex** :- (spiders - scorpion)	**Ex** :- (julius - scolopendra)

3-Classification of mammals according to the kind and number of teeth.

Mammals may be → Edentates (teethless)
→ Having teeth

1- **Edentates** (teethless mammals)

Ex:- (Sloth – armadillo)



2- **Mammals having teeth** are divided into

A)Animals have front teeth extending outwards to capture insects.

Ex:-(Hedgehog)

B)Animal have pointed canine and molars with sharp projection .

Ex:-(lion –tiger)

C)Animal have sharp incisors

They are divided according to the number of incisors in each jaw into

Lagomorphs:- have 2 pairs of incisors in each jaw.
Ex : Rat – jerboa-

Rodents :- have one pair Of incisors in the upper jaw and 1 pair in lower jaw.
squirrel**Ex**: Rabbit

Taxonomy :- It is a branch of biology that searches for the similarities and the differences among living organisms and places the similar ones in groups according to a certain system in order to ease their study.

Species :- It is a group of similar living organisms in shape that can reproduce to give new fertile individuals which are able to reproduce and keep the existence of the species .



Work sheet

Lesson 1 unit 3

Complete

1. ……………………… can't be seen by naked eyes.

2. Some plants can't be distinguished into roots, stems and leaves such as ……………… , …………….and ………………..

3. Voughair and Adiantum reproduce by …………………………

4. Plants that reproduce by the formation of seeds are divided into ……..and ……………

5. Angiosperms are divided into ………………… and ……………………….

6. ………………..and ………………….are from the Dicotyledons plants.

7. Maize and Wheat plants are from ………………..plants .

8. …………………….are invertebrate animals that characterized by a type of legs known as jointed legs.

9. Arthropods can be classified according to the number of legs into …………………… , ……………… and ………………..

10. Animals that have sharp incisors are divided according to their number in each jaw into ……………… and ……………………



lesson 2 :- Adaptation and diversity of living organisms

The place which living organisms live are the most important reason that lead to living organisms diversity n order to cope with the environmental changes like (**Climate change – Food diversity – Existence of water**).

Adaptation :- It is a modification of living organisms behavior ,body structure , or organs biological function to become more adapted to the environmental condition which it lives .

Types of adaptation

Structural adaptation

It is an adaptation that studies the structure of one body organ

Ex:- horse's hoof

- camels'pad

Functional adaptation

It is an adaptation of some organs and tissues to do a specific function

Ex :- Secretion of sweat in humman

-Secretion of poison in snake

Behavioural adaptation

It is an adaptation in the activity of some animals in different times of the daylight

Ex:- Birds migration at certain times



Reasons of adaptation :-

1- To get food .
2- To escape from their enemies .
3- For plants :- Due to the environmental conditions.

Adaptation and motion in mammals

The mammals	The modification in its limbs	The aim of modification	The type of adaptation
Whales – dolphin – sea lion	The two forelimbs are modified to become paddles	To perform the function of swimming and diving in water	Structural adaptation
Bat	The two forelimbs are modified into two wing like structure	To perform the function of flying.	Structural adaptation
Horse	Its limbs are modified to end with a strong hoof.	To perform the function of running on the rocky soil.	Structural adaptation
Monkey Gorilla	The bones of the forelimbs and fingers are elongated.	To enable it to climb trees and catch things .	Structural adaptation



Adaptation and nature of food in birds :-

The birds	The modification of its beaks and legs
(birds which feed on meat) **Ex** Hawks and vultures	**Beaks :-**Strong and sharp crooked beaks . **Legs :-**Four fingers ending with strong and sharp claws .
(birds which feed on shallow water warms) **Ex** Heron and hoopoe	**Beaks :-** Long thin beaks . **Legs :-** Long thin legs ending with thin fingers .
(birds which feed on mosses and fish) **Ex** ducks and geese	**Beaks :-**Wide intended beaks . **Legs :-**palm legs .

Adaptation in insectivorous plants :-

They can make carbohydrates ,but they can't make proteins .

So , some parts of these plants are adapted and modified to pounce and digest proteins

Ex :-Dionaea – Drosera – Halophila

Work sheet

Lesson 2

. Give an example for:

1. A predatory bird.

....

2. An insectivorous plant.

....

3. A flying mammal.

....

Compare between :

1- Insect , Arachnids according to no. of legs .

……………………………………………………………………………

2- Octopus – caw according to body support .

……………………………………………………………………………



REVISION PRACTICAL EXAM

FIRST TERM (PREP 1)

Activity no 1

To prove that molecules of matter are in a state of a continuous motion:

Steps:

1-Put a small amount of potassium permanganate in the glass cylinder contain water.

2- Leave the cylinder and observer what happen after a period of time .

Observation :

The color of violet spreads in a water .

Conclusion :

Molecules are in a continuous motion.



Activity no 2

To prove the presence of inter molecular spaces among molecules :

Steps:

1-Bring the graduated cylinder and put 300 cm^3 of water.



2- Add 200 cm^3 of ethyl alcohol .

3- Measure the volume of mixture .

Observation :

The volume of mixture = 488 cm^3 less than 500.

Conclusion :

There are inter molecular spaces among the molecules of matter .



Activity no 3

To identify the transformation of energy in the electric lamp .

Steps:

1-Make the electric circuit

2- close the circuit as shown in the figure .

3-touch the glass of the lamp.



Observe :

The electric lamp lights and become hot .

Conclusion :

In the electric lamp the electric energy convert into light energy and heat energy .



Activity no4

To design a model of the simple electric cell

STEPS

1-Try to soften the lemon by pressed on it

2 – Dip the zinc rod and copper wire into lemon .

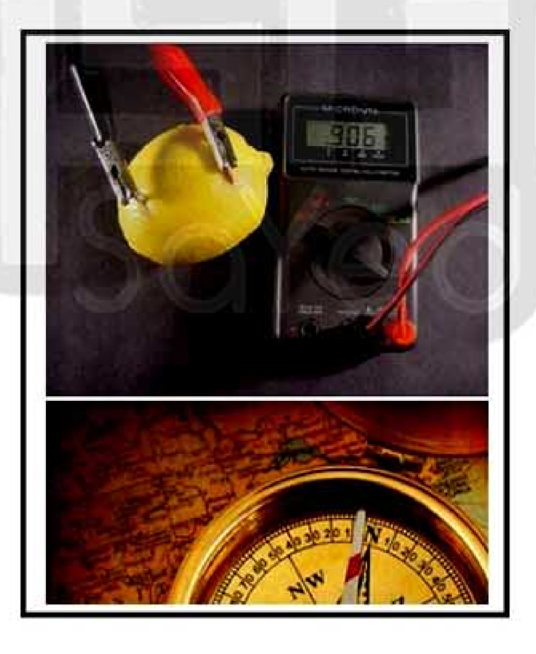
3- Form an electric circuit near a compass

Observe :

The needle of compass deflects

Conclusion :

The chemical energy stored in the lemon convert into electric energy



Classify these animals:

Spider –arachnids

Scolopendra –myriapods

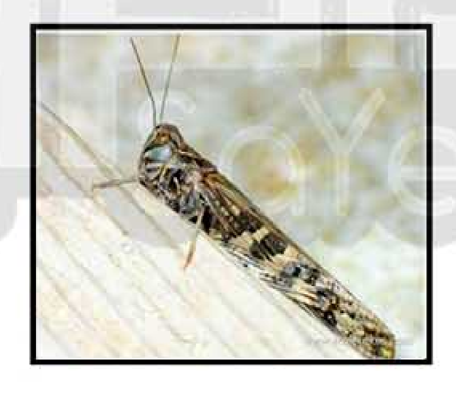
Locust –insects

Rodents – squirrel









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Good luck

Final revision

For prep one

1- Complete the following statements

1- Electromagnetic used to make ....and..........

2- The object weight increase as the distance.........from earth centre

3- Marble is resulted from............transformation

4- Types of telescope are ....and...........

5- Sedimentary rock are formed a result of ....,.......and ....

6- Waves are divided into two types which are ....waves and waves

7-from the set which depend one electromagnet force to work is the ....

8-.........rays are used in remote sensing

9- the nearest planet to sun is ....but.........

is the biggest one in the solar system

10- The earth consist of number of arranged layer from the surface to centre the crust ......and ....

11- the.......................layer in the atmospheric air protected living from the harmful rays

12- Granite is igneous rock that consists of three mineral ....,...........and........

13- Granite is from........ Rocks but limestone is from ....rooks.

14- the intensity of earth quake is measured by ....and ....is an apparatus for recording the earth quakes.

15- the .... layer in the atmosphere is air protecting organisms from harm for rays

16- from the benefit of friction :it ....

17- Sedimentary rocks are formed as result of the ....,.......and ....

18- Planets revolve around sun in ....paths these paths lie on plane ....to sun axis of rotation

19- The weigh of an object is measured by ....unit

20- the distance covered by light in one year is called.............

21- basalt it consist of ....,.........and ....mineral

22- planet earth occupies the .... position in solar system in view of volume , regarding the density it occupies

...............position the force gravity on its surface it occupies ......position

23- the volcano is ....

24- the direct cause of earthquake occurrence is ....

25- the direct cause of volcano occurrence is ....

26- molten material that exists beneath ....which extremely hot and as a thick fluid in earth interior is know

as ....and after its going out on earth is surface in the from of ......is called ....

27- sedimentary rocks from a thin cover that wraps about of earth is surface although they represent ....of

the total volume of earths crust rocks.

28- Ground water exist in the.....of rocks the forming the earth mass.

29-green plants use......gas in photosynthesis thesis process.

30-theforce of gravity between two objects depends on....and.......

31-the biggest plant in volume is.......and the highest one in density is..........

32-the nearest planet to sun is........where the farthest one form the sun is......

33-electric motor works on changing....

34-electric generator works on changing......

35-egypt seeks after using.....energy in producing electricity.

2- What's meant by :-

Force	speed
Inertia	transitional motion
Meteorites	relative motion
Comets	periodic motion
Moons	chemical reaction
Asteroids	chemical equation
Outer planets	
Inner planets	
Earthquakes	
volcano	

3- write the scientific term:-

1-the earth attraction force to an object.

2-amovement repeated regularly on equal intervals of time.

3-natural solid material that exits in crust and consists of one mineral group of minerals.

4- Masses of molten materials spread on side of volcano.

5-property of object resistance to change its state form the rest or movement an less a force affects on it.

6-breaking out the bond molecule so from reactants and formation of anew bonds between molecules of products of chemical reaction.

7-it is the motion of an object in which its position is changed relative to a fixed point.

8-distance covered by light in one year.

9-spherical dark bodies, their number is eight revolve around the sun in one direction.

10-small space bodies that are affected by planets gravity.

11-huge solid rocky masses that fall in space and do not burn completely and same parts of it reach to earth's surface.

12-it is relatively light outer layer of earths crust and is formed oh one mineral a group of minerals.

14-A fracture in the rocks of the earth's crust that moves the rocks on its sides.

16-it is opening in the earth's crust which permit the passage of molten materials and the poisonous gases.

17-the region with separates between the group of inner planets form that of the of the outer planet.

18- molten material exists at depths beneath the crust

19- a rock formed of lava flow when I comes on earth's surface

20- The rock masses that fall from the space and reach earth's surface

21- Zigzag line reduced by earth quake recording

22- The more fine sized fragmented materials that ejected from the surface.

24- System then consists of thousands of million stars

25- Small space bodies that are affected by the plants gravity

26- Solidified masses office and gasses and rock pieces revolving around the sun

4- Name the specimen from the following

- Rock consists of feldspars, olivine and pyroxene , mineral
- White rock if it is pure it has more solidity and solidarity then limestone
- Igneous plutonic rock ,its color is pink or grey in Egypt exists in the eastern desert and Sinai premised

5- Give reason:

- Objects weigh is changed from planet to anther
- An take place when added to limestone
- Car passengers are rushed forward when the car stopped suddenly
- Astron outs cannot hear each other voices directly in space

- Astronomers don't measure the distance between starts with km
- In comical reaction play vital role in our live
- White clouds are formed when ammonia gas react chalked
- Burning of cool and cellulosed fiber had bad effects
- Carbon monoxide is dangerous gas for human s health
- The car passenger are rushed forward when car stopped suddenly
- Spare parts of car recovered with grease
- Presence of life on surface on surface of earth planted only
- Earth gravity help in continuity of the
- Crystals of mineral forming peloton Igneous rocks are large in size
- The components of basalt rocks are not seen by naked eye
- The presence of white color surrounds the planted earth
- Electric fan still works for few second after cutting off the electric current
- Volcano cash covers areas for away from the volcano
- After the occurrence of earth quakes we must go to garden
- Earth shaking take place at the occurrence of ear earth quakes
- Crystal of mineral that from the plutonic I genus rocks are large sized
- Volcanic rocks contain small circular holes
- Temperature on earth surface suits the life of living organisms
- Earth inner core rich in iron and nickel
- Stead fastness of hydro sphere on earth surface
- Density of outer planted is low
- Gravity on earth surface is larger the in on mars surface
- We receive the sunlight at the same time we don't hear the sound of solar explosions
- Astronutout hear each other voices directly in space
- Chemical equation should be balanced
- Which of the following rocks is sedimentary I igneous or metamorphic ?
- Marble – granite – limestone – sandstone – basalt

6- Mention the main minerals that share in structure

Granite basalt limestone

7- Mention one application

1- infrared rays 2- ultra violet ray 3 – x rays

4- visible light 5- gamma rays



8- Choose the correct answer:

- Water is result from the reaction of HCl with

A)sodium b) NaoH c) k d) ca

- Layer which consists of molten metal is

a) Crust b) mantle c) outer core d) inner core

- Big sized less dense planet which consists of gaseous elements the

a) Earth b)mercury c) Jupiter d) Venus

*the idea of machine lubrication deepeners on lessening of the

a) Object weight b) inertia c) friction d) granite

* From application on u v rays

a)night vision apparatus b) photo graphing bones c) sterilizing the set of surgical d)discovering some swellings

*biggest unit of universe eared (planets – stars – galaxies – moons)

*planets revolve around the sun in ....paths(circular – elliptical – spiral – irregular)

* the nearest planet to the sun (earth - mercury – mars _ Venus)

* big volume planet , its density is low and consists of gaseous elements (earth - mercury – Jupiter- Venus)

* the inner layer of earth is called (crust –eider miss _ mantle – core)

* the inner core of earth is rich in (iron and copper – iron and silver – and nickel – iron and aluminium)

* telescope is used in studying the(intensity of earth quakes-mineral – volcanoes – celestial bodies

*all of the following part of volcano except (pipe – cone-vent-plateau)

* Seismograph apparatus is used in recording the ......(volcanoes –storms – earth quakes-celestial body)

*outer layer of earth is called (crust –mantle-inner core – outer core)

* which of the following isn't considered as electromagnetic waves ....?(Infrared rays – visible light – sound waves – ultra violet ray)

* which of following is considered as circular motion?(fan motion – pendulum motion – train motion – sun flower plant motion)

* water bodies on earth surface from the percentage of (50%-71%-40%-30%)

*The metamorphic rock is produced as result of effect of heat and press we on the rooks .(igneous only – sedimentary only – meta morphic only – igneous is Edina try)

* planet revolve around the sun in ……paths (circular – elliptical – spiral – irregular)

*which of the following planets has largest gravity on its surface (mars –mercury – Venus – earth)

*in addition to sun, solar system includes 8 plants only (asteroid –materials and comet star-plants – all previous answer)

*all the following are electromagnetic waves except for the ……….(thermal rays - visible light- sound waves – u.vrayes)

* the following periodic notion except for (fan motion- pendulum - projectile – light waves)

*the following forces and operation are an application on friction except for (taking walks on rood – car moving because of its when turning – the work of dynamo – stopping the car using the brakes)

* the amount of ear this attraction to object is (object mass –object weight – gravity acceleration –central force)

* an object Wight on earth surface is related to ……. Farces (electromagnetic – attraction – weak nuclear – strong nuclear)

* in the periodic notion ………..(path way is straight – motions velar repeated – time regular repeated – speed regular repeated)

*the car brake application of (attraction force – friction force- centrifugal forces - of inertia)

* the inertia force effects the …… objects (moving – static – moving static)

* From the examples of forces inside living system (pulse inside blood vessels – inserting-brake)

9- Compare

Light waves and sound waves

Inner planets and outer planets

Granite and limestone

Electric generator – electric motor

Meteorites and meteors

Asteroids and planets

Universe and galaxy

Plutonic and volcanic rocks

Crust and mantle

Sand stone and limestone how distinguished

Comets and meteors

10- problem

Calculate the mass fan object Wight 98N gravity=9.8 m/s

11-Write the chemical equation

- Carbon burning in princes of oxygen
- Hydrochloric acid combine with ammonia gas
- The reaction between carbon monoxide with oxygen compound with compound with compound element with element with compound

12- knowing mass of c= 12 and 0=16

- Find to total mass of reactant and products
- C+o2 ——^——> o2

13- Find

If the earth gravity acceleration place is 9.8 m/s find the weight of the following

a- **A.3kg mass ball**

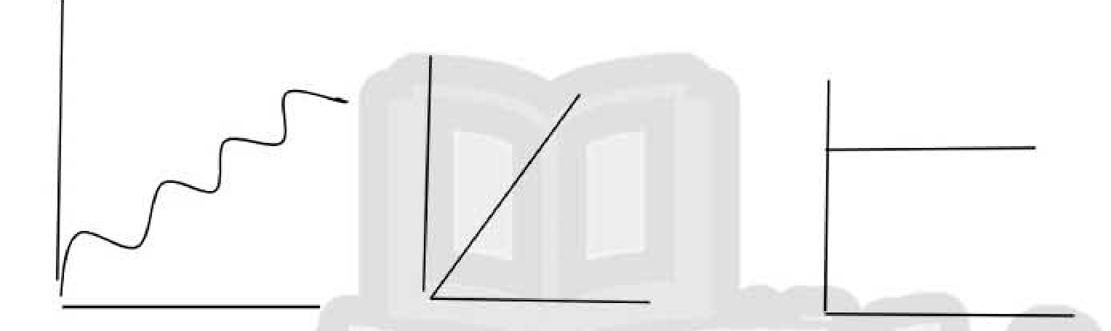
b- **50kg mass boy**



14- Write of three benefit and three harms of friction

15- Explain importance of Co2 N2 O2

16- Identify the phase of the movable object in each graph of the following



17- Put (√) or (x)

- The water of oceans is fresh water (   )
- The earth inner core is rich in iron and Nickel(   )
- Green plants use carbon dioxide gas in photo synthesis process(   )
- Mantra layer lies beneath the earth outer core (   )
- Air pressure on earth surface is suitable for the continuity of life(   )
- Earth radius between two poles is larger than that at the (   )



